SNAP FASTENER

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a snap fastener for use in clothes, bags, shoes, curtain and the like, the snap fastener comprising a snap element having an engaging head formed on a substrate thereof and another snap element having an engaging hole portion formed in a substrate thereof and being attached on attached bodies so that the engaging head and the engaging hole portion can engage with/disengage from each other.

2. Description of the Related Art

In a conventional snap fastener disclosed in Japanese Utility Model Publication No. 50-38688, as shown in Fig. 18, a male portion 101 of a snap button has an insertion cylinder 106 which protrudes with an expanded ring 110 of circular section provided on an intermediate outer peripheral face, such that it is located in the center of a rear face of a base plate, while a grip portion 108 protrudes on a side of edges of the base plate. A female portion 102 includes a fitting cylinder 104 having a through hole 107 with a smaller diameter than the expanded ring 110, such that it is located in the center of its base plate. The insertion cylinder 106 is inserted into the fitting cylinder 104 so that the expanded ring 110 engages the through hole 107.

In a slide fastener disclosed in Japanese Patent Laid-Open Application No. 11-309005, as shown in Fig. 19, one of the fastener tapes 216 acting as a pair, has engaging male portions 201 formed at a predetermined interval, each having an engaging head 210 and stretched sideways or in a lateral direction as a fastener element (engagement element), while the other fastener tape 216 has engaging female portions formed so as to have an engaging hole portion 207 each containing an engaging portion, such that it protrudes sideway or in a lateral direction. The engaging male portion 201 and the engaging female portion 202 are capable of engaging each other. The fastener elements 200 formed on the right and left fastener tapes 216 can engage with or disengage from each other in the up/down direction by sliding a slider placed to pass through a fastener chain.

The snap button shown in Fig. 18 described previously is used in attached bodies overlapping with each other. When both of the attached bodies are stretched in a horizontal direction, the male portion 101 and the female portion 102 may be tilted so that the engagement between them may be released. In the slide fastener shown in Fig. 19, the engaging male portion 201 and the engaging female portion 202 formed integrally on each fastener tape 216 are engaged with or disengaged from each other by sliding the slider placed to pass through the fastener chain. Thus, because these fastener elements are always

engaged or disengaged by an operation for engagement or disengagement between the engaging male portion 201 and the engaging female portion 202 disposed on end portions of the attached bodies, the engagement or disengagement between the engaging male portion 201 and the engaging female portion 202 disposed near the center is difficult to perform. Particularly, the disengagement of the engaging male portion 201 from the engaging female portion 202 in an engaging state takes a very troublesome operation because there is no any mechanism for supporting this disengagement operation.

SUMMARY OF THE INVENTION

The present invention has been achieved in views of the above-described problems. An object of a main aspect of the invention is to provide a snap fastener which, when a snap element having an engaging head and a snap element having an engaging hole portion are engaged with each other, allows a disengagement operation of the snap elements to be carried out simply and accurately using a grip portion provided on one snap element and a receiving portion provided on the other snap element.

Another object of the invention is to provide a snap fastener, which allows a gripping operation for the snap element upon the disengagement operation to be carried out easily by specifying the structure of the grip portion provided

on one snap element.

Another object of the invention is to provide a snap fastener which allows a disengagement operation of snap elements engaging each other to be carried out accurately and quickly by specifying the structure of a pair of the snap elements.

Another object of the invention is to provide a snap fastener comprised of convenient snap elements each provided with a grip portion and a receiving portion, which allows grip function and receiving function to be exerted at the same time.

Another object of the invention is to provide a snap fastener in which snap elements can be manufactured easily and attached on an attached body easily by specifying material of the pair of the snap elements.

Another object of the invention is to provide a snap fastener in which the snap elements can be attached on the attached body easily at the same time when they are molded by using thermoplastic resin as material of the snap element.

Another object of the invention is to provide a snap fastener whose manner of use is specified, and in which the attached body on which the snap element is attached is a belt and attaching of the belt can be carried out easily, thereby developing a use range of application products.

Another object of the invention is to provide a snap fastener whose manner of use is specified and in which the

attached body on which the snap element is attached is cloth or sheet and attaching of the cloth and sheet can be carried out easily, thereby developing a use range of application products.

Another object of the invention is to provide a snap fastener whose manner of use is specified and in which a pair of the attached bodies can be connected securely with the snap elements, thereby developing a use range of application products.

Another object of the invention is to provide a snap fastener whose manner of use is specified and in which the attached body on which the snap elements are attached is a curtain and attaching of the curtain can be carried out easily, thereby developing a use range of application products.

Another object of the invention is to provide a snap fastener which is capable of maintaining an engaging state between the snap elements securely and accurately by specifying the attaching structure of the pair of the snap fasteners onto the attached bodies.

To achieve the above objects, according to the main aspect of the invention, there is provided a snap fastener comprising a pair of snap elements capable of engaging with or disengaging from each other in an opposing direction, wherein one snap element 1 thereof has an engaging head provided protrudedly centrally on a base plate, the engaging head is a head portion

expanded in its cross section, while the other snap element has an engaging hole portion provided in the center of a base plate, with which the engaging head is capable of engaging, an attached body being attached onto a base portion of each base plate, any one of the snap elements having a grip portion provided on its base plate so as to carry out raising/falling operations, while the base plate of the other opposing snap element having a receiving portion making contact with the base portion of the one snap element. Consequently, when the engaging head and the engaging hole portion of the snap elements are engaged, engagement or disengagement of the snap elements can be carried out very easily and securely through the grip portion of the snap element and the receiving portion of the other snap element.

Preferably, the grip portion provided on any one of the snap elements of the snap fastener is formed to protrude outward beyond an end portion or an edge of the base plate of the other snap element upon engagement. Consequently, the grip portion can be raised easily by hooking with the finger thereby facilitating the disengagement operation of the snap fastener.

Preferably, one of the snap elements of the snap fastener has the base portion protruded from an end of the flat base plate so as to have an L-shaped cross section while the other snap element has the tongue-like receiving portion provided at an end of the flat base plate. Consequently, the engaging

head and the engaging hole portion, which are engagement/disengagement mechanism of the snap fastener can be installed on the snap elements in an ideal formation, thereby exerting an excellent engagement/disengagement function.

Preferably, each of the pair of the snap elements of the snap fastener has the grip portion protruded beyond the base portion of the mating base plate at an end of each base plate while the receiving portion is provided inward of the grip portion. Consequently, in addition to the effect of the first aspect, the grip portion and the receiving portion are provided on a single snap element, so that the grip function and the receiving function can be exerted concurrently with such a simple mechanism.

Preferably, the pair of the snap elements of the snap fastener are molded integrally by injection molding means with thermoplastic resin, respectively. Alternatively, at least one of the snap elements of the snap fastener is molded integrally by injection molding means using thermoplastic resin such that the base portions of the base plates of the snap elements are attached on the attached bodies. Consequently, the snap element can be manufactured easily and further, the base portion of the snap element can be attached on the attached body easily. Further, at the same time when the snap element is produced, the base portion of the snap element can be attached on the attached body.

Preferably, at least one of the snap elements of the snap fastener has an attaching plate provided adjacent to the base portion of the base plate, the attaching plate having insertion holes through which the attached body is capable of being inserted. Consequently, a belt or cord is used as the attached body and the belt or cord can be attached to the base portion of the snap element easily.

Alternatively, at least one of the snap elements of the snap fastener has an attaching portion provided adjacent to the base portion of the base plate, the attaching portion having an attaching hole with which the attached body is sewed. Consequently, a very convenient snap fastener can be obtained in which various kinds of attached body, that is, cloth or sheet can be attached by sewing onto the snap element easily.

Preferably, a plurality of the snap elements of the snap fastener are attached on a pair of the attached bodies at a predetermined interval such that they oppose each other. Consequently, a long snap fastener can be manufactured easily so that it can be applied to various kinds of products quickly and inventory control thereof is easy.

Preferably, the snap fastener is used for a curtain wherein the curtain is attached on the base portion of the base plate of one of the snap elements while a curtain rail runner is attached on the base portion of the base plate of the other snap element. Consequently, the snap element can be applied

to the curtain device easily, thereby providing with convenience for replacement of the curtain.

Preferably, the attached bodies attached on the base portions of the base plates of the respective snap elements of the snap fastener are disposed such that the center lines of the attached bodies are on the same line, that is, the same plane. Consequently, the snap elements can be attached to a pair of the attached bodies arranged in the same plane easily, so that a snap fastener can be finished to have an excellent appearance.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view showing a disengagement condition of a snap element of a first embodiment of the present invention.

Fig. 2 is a cross sectional view of the same snap element when disengaged.

Fig. 3 is a cross sectional view of the same snap element when engaged.

Fig. 4 is a cross sectional view showing an operation when disengaging the same snap element.

Fig. 5 is a front view of a snap fastener of a second embodiment of the present invention.

Fig. 6 is a cross sectional view of a snap element of a third embodiment of the present invention when engaged.

Fig. 7 is a cross sectional view of a snap element of a fourth embodiment of the present invention when engaged.

Fig. 8 is a front view of a snap element of a fifth embodiment of the present invention when engaged.

Fig. 9 is a cross sectional view of the snap element of Fig. 8 when engaged.

Fig. 10 is a perspective view of a snap element of a sixth embodiment of the present invention when disengaged.

Fig. 11 is a cross sectional view of the same snap element of Fig. 10 when engaged.

Fig. 12 is a perspective view of a snap element of a seventh embodiment of the present invention when disengaged;

Fig. 13 is a cross sectional view of the same snap element of Fig. 12 when engaged.

Fig. 14 is an exploded perspective view of a curtain device using a snap fastener of an eighth embodiment of the present invention.

Fig. 15 is a cross sectional view of the same snap element of Fig. 14 when engaged.

Fig. 16 is a perspective view of a snap fastener used in a sandal.

Fig. 17 is a perspective view of snap fasteners used in a pocket of clothes.

Fig. 18 is a cross sectional view of a well known snap button.

Fig. 19 is a front view of another well known slide fastener.

DESCRIPTION OF THE PREFERED EMBODIMENTS

Hereinafter, embodiments of a snap fastener of the present invention will be described in detail with reference to the accompanying drawings.

In the snap fastener of the present invention, an engaging head 6 is formed in one snap element 1 while an engaging hole portion 7 is formed in the other snap element 2, such that the engaging head 6 and the engaging hole portion 7 can be engaged with/disengaged from each other. The snap elements 1, 2 are formed directly onto an attached body 16 in the form of a pair by injection molding means using thermoplastic resin such as polyacetal, polyimide, polypropylene, and polybutylene terephthalate, or they are attached to the attached body 16 after being molded.

In the snap fastener according to a first embodiment of the invention shown in Figs. 1 to 4, the snap element 1 is formed directly onto an edge portion 18 of the attached body 16 such as a tape 17, clothes, sheet 20 by injection molding. This snap element 1 is formed with an L-shaped cross section such that a protruded type base portion 5 is provided on an end of a rear face of a flat base plate 3, while the engaging head 6 having an expanded head portion is provided protrudedly in the center

of the rear face of the base plate 3, the base portion 5 being attached integrally with the attached body 16 by injection molding. There is provided a grip portion 8 on an end of the base plate 3 opposite to the base portion 5, which is protruded to a place which does not overlap the surface of the snap element 2 when the snap element 1 is engaged with the snap element 2.

In the other snap element 2, a base portion 5' of the flat base plate 4 is attached integrally on an edge portion 18 of the attached body 16 by injection molding. The through engaging hole portion 7 is made in the center of the base plate 4 and an engagement protrusion 10 which is protruded slightly inward is provided in the center of a side face of the engaging hole portion 7, so that the engaging head 6, which is expanded in its cross section, is engaged therewith. A tongue-like receiving portion 8, which is protruded slightly obliquely downward, is provided on a side opposite to the attaching side of the base plate 4 or base portion 5', so that the base portion 5 of the base plate 4 of the snap element 1 can be received.

When the snap element 1 and the other snap element 2 are engaged with each other through the engaging head 6 and the engaging hole portion 7 as shown in Fig. 3, tapes 17, which are the right and left attached bodies 16, are disposed such that the center lines in the thickness direction of both the tapes 17 are in the same plane. If, as shown in Fig. 4, the grip portion 8 formed in the snap element 1 is raised with a

finger in order to release this engagement between the engaging head 6 and the engaging hole portion 7, the base portion 5 on a side opposite to the grip portion 8 is supported by the receiving portion 9 so that the snap element 1 is tilted with respect to the snap element 2 around a portion in which the base portion 5 makes contact with the receiving portion 9. As a result, the engaging head 6 is moved in such a direction to leave the engaging hole portion 7 thereby disengagement between the engaging head 6 and the engaging hole portion 7 being carried out smoothly.

In a snap fastener according to a second embodiment of the invention shown in Fig. 5, the snap elements 1, 2 are attached integrally on the edge portions 18 of the tapes 17, as the pair of right and left attached bodies 16 by injection molding. This snap fastener is used for flies and pocket 30 of clothes, and shoes such as boots. The snap elements 1 are engaged or disengaged individually by hand.

In the snap fastener according to a third embodiment of the invention shown in Fig. 6, the snap element 2 having the engaging hole portion 7 in its base plate 4 is attached integrally through the base portion 5' onto the tape 17, which is the attached body 16, by injection molding. The grip portion 8 is formed on an end portion of the base plate 4 on the side opposite to the base portion 5' so as to protrude outward beyond the base portion 5 of the other snap element 1. In the snap

element 1 having the engaging head 6 in its base plate 3, the base portion 5 of the base plate 3 is attached integrally onto the tape 17 by injection molding, such that the receiving portion 9, which makes contact with the base portion 5' of the base plate 4 of the mating snap element 2 and is capable of receiving it, is formed on the side opposite to the base portion 5. This type of the snap fastener is convenient because the operation can be seen directly at the time of engagement or disengagement operation.

In a snap fastener according to a fourth embodiment shown in Fig. 7, the engaging head 6 is provided protrudedly in the center of a rear face of the base plate 3 of the snap element 1 and the grip portion 8 is formed at an end of the base plate 3 opposite to the base portion 5. The through engaging hole portion 7 is provided in the center of the base plate 4 of the other snap element 2 and the tape 17 is attached to the base portion 5' of the base plate 4, and the tongue-like receiving portion 9, which makes contact with the base portion 5 of the mating snap element 1 and receives it, is provided protrudedly on the side opposite to this base portion 5'. A front end of this receiving portion 9 is protruded outward beyond the base portion 5 of the base plate 3 thereby forming the grip portion 8.

In this type of the snap fastener, the one side snap element 1 is provided with the grip portion 8 and the receiving

portion 9, which is provided on the base plate 3 between the grip portion 8 and the engaging head 6 to receive the base portion 5' of the other snap element 2. The other snap element 2 is also provided with the grip portion 8 and the receiving portion 9. Thus, even if any side is disposed on the surface of clothes or the like, the engagement or disengagement of the snap elements 1, 2 can be carried out easily.

In a snap fastener according to a fifth embodiment of the invention shown in Figs. 8 and 9, the base portion 5 of the base plate 3 of the one side snap element 1 is attached integrally on the edge portion 18 of the tape 17 which is the attached body 16 by injection molding. The grip portion 8 is provided protrudedly on an front end of this base plate 3 in a direction perpendicular to the longitudinal direction of the base plate 3 and the engaging head 6 is provided protrudedly in the center of the rear face of the base plate 3. Further, the base portion 5' of the base plate 4 of the other snap element 2 is attached integrally on the edge portion 18 of the tape 17 by injection molding. The engaging hole portion 7, having the engagement protrusion 10 on an inside face thereof, is provided in the center of the base plate 4 and the receiving portion 9, which makes contact with the base portion 5 of the mating snap element 1 for receiving it, is formed at a distal end of the base plate 4. In this type of the snap fastener, if the grip portion 8 formed on the one side snap element 1

is raised by the fingers, the base portion 5 is supported by the receiving portion 9 of the snap element 1, so that the engaging head 6 can be pulled out of the engaging hole portion 7 smoothly.

In a snap fastener according to a sixth embodiment of the invention shown in Figs. 10 and 11, the one side snap element 1 is provided with the engaging head 6 in the center of the rear face of the base plate 3 and the grip portion 8, which is warped slightly upward, is provided at a distal end of the base plate 3. A sheet-like attaching plate 11, which is protruded laterally from substantially the center of the base portion 5, is provided continuously on the other end and this attaching plate 11 has two rows of insertion holes 12 through which a belt or a cord 19, which is the attached body 16, can be inserted. The engaging hole portion 7 is provided in the center of the other snap element 2 and the tongue-like receiving portion 9 is provided such that it is protruded outward from a bottom side of a distal end of the base plate 4. Further, a sheet-like attaching plate 11, which is protruded outward, is provided at a distal end of an upper side of the base portion 5' of the base plate 4. This attaching plate 11 has two insertion holes 12 through which a belt or a cord 19 is to be inserted. The attached bodies 16 such as the belt or the cord 19 inserted through the insertion holes 12 are attached such that their respective center line in the thickness direction

is disposed within the same plane.

In this type of the snap fastener, the belt or the cord 19 is inserted into the insertion holes 12 provided in the attaching plate 11 in such a manner that the length thereof can be adjusted. The insertion hole 12 to be provided in the attaching plate 11 may be singular and in such a case, after the belt or the cord 19 is inserted into the insertion hole 12, an end portion of the belt or the cord 19 is fixed.

In a snap fastener according to a seventh embodiment of the invention shown in Figs. 12 and 13, the one side snap element 1 is provided with the engaging head 6 in the center of the rear face of the base plate 3 and the grip portion 8 is formed at a distal end of the base plate 3. An attaching portion 13, which is protruded outward from the center of the base portion 5 at the other end, is provided continuously. This attaching portion 13 has an attaching groove 15 capable of catching cloth or sheet 20 which is the attached body 16. Further, the attaching portion 13 has two attaching holes 14 for attaching cloth or sheet 20 serving as the attached body 16 by sewing. The attached body 16 is caught by the attaching groove 15 and sewed with a sewing yarn 21.

In the other snap element 2, the engaging hole portion 7 having the engagement protrusion 10 is provided in the center of the flat base plate 4 and the receiving portion 9 is provided such that it is protruded outward from the bottom side of a

distal end of the base plate 4. Then, the sheet-like attaching plate 13 is provided protrudedly from the base portion 5' of the other end of the base plate 4 and this attaching portion 13 has the attaching groove 15 capable of catching cloth or the sheet 20, which serves as the attached body 16. The attaching portion 13 has two attaching holes 14 for sewing the cloth or sheet 20, so that the attached body 16 is caught by the attaching groove 15 and sewed with the sewing yarn 21. The attached bodies 16 such as the cloth or sheet 20 sewed in the attaching groove 15 are attached such that their center line thereof in the thickness direction are disposed within the same plane. Meanwhile, the attaching portion 13 may be formed in a single plate and the attached body 15 may be attached to it.

A snap fastener according to an eighth embodiment of the invention shown in Figs. 14 and 15 is an example applied to an indoor curtain. Through holes 29 are provided at a predetermined interval in the edge portion 18 of a curtain 24 which is the attached body 16 and the one side snap element 1 is attached such that the base portion 5 of the base plate 3 is disposed in this through hole 29 by injection molding. The engaging head 6 is provided protrudedly in the center of the rear face of the base plate 3 and the grip portion 8, whose end is warped slightly, is formed at a distal end of the base plate 3.

A curtain rail 27 to be attached indoor includes a

T-shaped sliding groove 28 and a runner 25 to be inserted into the sliding groove 28 is attached to the base portion 5' of the snap element 2 as the attached body 16. This snap element 2 is formed integrally such that the engaging hole portion 7 is provided in the center of the flat base plate 4, a supporting shaft 26 is provided protrudedly on the base portion 5' of the base plate 4 and the circular runner 25 is disposed on the supporting shaft 26. The runner 25 is inserted into the sliding groove 28 in the curtain rail 27 freely slidably and the engaging head 6 of the snap element 1 attached on a curtain 24 is engaged with the engaging hole portion 7 in the snap element 2 so that the curtain 24 is drooped. At this time, the center line of the supporting shaft 26 is aligned with the center line of the curtain 24 in the thickness direction.

Figs. 16 and 17 show manner of usage of the snap fastener. In Fig. 16, one of a pair of the snap elements 1, 2 is attached to a distal end of a band 23 provided on a sandal 22 while the other snap element 2 is attached to the main body of the sandal 22. Fig. 17 shows an example in which snap fasteners provided with plural snap elements 1, 2 are attached on an opening 31 of the pocket 30 of clothes such that they oppose each other.

The present invention is not limited to the above described embodiments. The base plate is not limited to a flat plate but may be formed in a shape whose center portion is bulged. Further, the entire shape of the base plate is not limited to

rectangular but may be circular or polygon. Further, the engaging head and the engaging hole portion may be provided in plural quantity.